

Fact Sheet



For Final Renewal Permitting Action Under 45CSR30 and Title V of the Clean Air Act

Permit Number: **R30-03900005-2012**

Application Received: **April 1, 2011**

Plant Identification Number: **03900005**

Permittee: **Union Carbide Corporation**

Facility Name: **Institute Plant**

Business Unit: **Logistics (Group 3 of 5)**

Mailing Address: **P.O. Box 8361, South Charleston, WV 25303**

Physical Location:	Institute, Kanawha County, West Virginia
UTM Coordinates:	432.00 km Easting • 4,284.31 km Northing • Zone 17
Directions:	From I-64, take the Institute exit, turn right onto State route 25. Plant is located about ½ mile west on Route 25.

Facility Description

Group 3 of 5 is the Logistics Group (also known as Supply and Services). This Group includes an Ethylene Oxide (EO) Distribution Unit which unloads ethylene oxide; a Barge Operations Process to load and unload barges; a Tank Truck and Rail Car Operations Process to load and unload tank trucks and rail cars; and the Plant Lab.

Emissions Summary

Logistics (Group 3 of 5) Emissions Summary [Tons per Year]		
Regulated Pollutants	Potential Emissions	2010 Actual Emissions
Carbon Monoxide (CO)	9.2	6.7
Nitrogen Oxides (NO _x)	1.7	1.2
Particulate Matter (PM _{2.5})	0.05	0.04
Particulate Matter (PM ₁₀)	0.05	0.04
Total Particulate Matter (TSP)	0.05	0.04
Sulfur Dioxide (SO ₂)	0.01	< 0.01
Volatile Organic Compounds (VOC)	5.4	0.9
<i>PM₁₀ is a component of TSP.</i>		
Hazardous Air Pollutants	Potential Emissions	2010 Actual Emissions
Ethylene Glycol	0.01	< 0.01
Ethylene Oxide	3	0.5
Isophorone	Included with Acetone Derivatives Plant (Group 2 of 5)	
Methyl Isobutyl Ketone	1.2	0.2

Some of the above HAPs may be counted as PM or VOCs.

Title V Program Applicability Basis

Due to the facility-wide potential to emit over 100 tons per year of criteria pollutant, over 10 tons per year of a single HAP, and over 25 tons per year of aggregate HAPs, Union Carbide Corporation is required to have an operating permit pursuant to Title V of the Federal Clean Air Act as amended and 45CSR30.

Legal and Factual Basis for Permit Conditions

The State and Federally-enforceable conditions of the Title V Operating Permits are based upon the requirements of the State of West Virginia Operating Permit Rule 45CSR30 for the purposes of Title V of the Federal Clean Air Act and the underlying applicable requirements in other state and federal rules.

This facility has been found to be subject to the following applicable rules:

Federal and State:	45CSR6	Open burning prohibited.
	45CSR11	Standby plans for emergency episodes.
	45CSR13	Preconstruction permits for minor sources.
	WV Code § 22-5-4 (a) (14)	The Secretary can request any pertinent information such as annual emission inventory reporting.
	45CSR30	Operating permit requirement.
	45CSR34	Emission Standards for Hazardous Air Pollutants.
	40 C.F.R. Part 61	Asbestos inspection and removal

	40 C.F.R. 63, Subpart PPP 40 C.F.R. Part 82, Subpart F	Polyether Polyols MACT Ozone depleting substances
State Only:	45CSR4 45CSR§§21-37 and 40 45CSR27	No objectionable odors. Control of VOC Emissions Best Available Technology (BAT) for HAPs

Each State and Federally-enforceable condition of the draft Title V Operating Permit references the specific relevant requirements of 45CSR30 or the applicable requirement upon which it is based. Any condition of the draft Title V permit that is enforceable by the State but is not Federally-enforceable is identified in the draft Title V permit as such.

The Secretary's authority to require standards under 40 C.F.R. Part 60 (NSPS), 40 C.F.R. Part 61 (NESHAPs), and 40 C.F.R. Part 63 (NESHAPs MACT) is provided in West Virginia Code §§ 22-5-1 *et seq.*, 45CSR16, 45CSR34 and 45CSR30.

Active Permits/Consent Orders

Permit or Consent Order Number	Date of Issuance	Permit Determinations or Amendments That Affect the Permit (<i>if any</i>)
R13-2646A	August 8, 2006	NA
CO-R21-97-41	October 20, 1997	June 14, 2006 letter from J. L. Blatt October 7, 2011 letter from T. J. London
CO-R27-99-14-A(92)	March 31, 1999	NA

Conditions from this facility's Rule 13 permit(s) governing construction-related specifications and timing requirements will not be included in the Title V Operating Permit but will remain independently enforceable under the applicable Rule 13 permit(s). All other conditions from this facility's Rule 13 permit(s) governing the source's operation and compliance have been incorporated into this Title V permit in accordance with the "General Requirement Comparison Table B," which may be downloaded from DAQ's website.

Determinations and Justifications

Changes to Title V Permit

- 1) **Section 1.1 Emission Units Table Change.** An error was corrected from the previous Title V permit. Emissions from the West Tank Truck Rack (L6TT) are not controlled by Flare A163. As a result, the following change was made to the Emission Units Table in Section 1.1:

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Control Device
L6TT	L6TT or 163A	West Tank Truck Rack	1950s	None or Flare A163

- 2) **Added Clarification to Condition 3.1.8.** Since the Risk Management Plan requirements of 40 C.F.R. 68 only apply to EO Distribution Operations and do not apply to the Barge/Tank Truck/Rail Car Operations, Union Carbide requested that the following clarification be added to Condition 3.1.8: “(This condition only applies to the EO Distribution Operations.)”
- 3) **Revised the Rule Citation in Condition 4.1.1.1.** The rule citation for Condition 4.1.1.1 was incorrectly stated as 40 C.F.R. §63.119(a)(1) which applies to a Group 1 storage vessel storing a liquid for which the maximum true vapor pressure of the total organic hazardous air pollutant emissions is less than 76.6 kilopascals. The material stored in Tanks 9704 and 9705 is ethylene oxide which has a maximum true vapor pressure greater than 76.6 kilopascals. The correct rule citation should be 40 C.F.R. §63.119(a)(2) which applies to a Group 1 storage vessel storing a liquid for which the maximum true vapor pressure of the total organic hazardous air pollutant emissions is greater than or equal to 76.6 kilopascals. The rule citation in Condition 4.1.1.1 was the only change necessary. The other requirements and citations for the Group 1 storage vessels in the Title V permit were correct.
- 4) **Addition/Deletion of Requirements and Changes to the Numbering of the Title V Permit.** The following conditions have been added, deleted, or renumbered as part of this Title V permit renewal:

Condition Number in R30-03900005-2006 (3 of 5) (AA01)	Condition Number in R30-03900005-2011 (3 of 5)	Explanation, if needed.
---	3.3.1.d	Added new testing boilerplate
4.5.3	---	Deleted “reserved” condition
4.5.4	4.5.3	Renumbered
4.5.5	4.5.4	Renumbered
4.5.6	4.5.5	Renumbered
5.4.3	---	Deleted because B1L is exempt from 40 C.F.R. 63, Subpart Y per 40 C.F.R. §63.560(d).

40 C.F.R. 64 - Compliance Assurance Monitoring (CAM)

According to 40 C.F.R. §64.2(a), CAM applies to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria: 1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 C.F.R. §64.2(b)(1); 2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and 3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. 40 C.F.R. §64.2(b)(1)(i) exempts emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act; and 40 C.F.R. §64.2(b)(1)(vi) exempts emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method.

Logistics has the following emission units with control devices:

Emission Unit ¹	Emission Unit Description	Control Device	Emission Point
C9704	Tank 9704	Primary Flare B410 or Secondary Flare A410	410B or 410A
C9705	Tank 9705		
PMP	Priming Pot		
EOTC	EO Tank Car Rack		
RCL4 (aka TCL4)	East Rack Rail Car Loading	Scrubber F040	040F
L5RC (aka L5TC)	West Rail Car Rack	Flare A163	163A

¹ Although C9745, C9746, and C9747 were listed in the Emission Units Table in Section 1.1 of the Title V permit renewal as emission units that vent to the Primary Flare (B410) or Secondary Flare (A410), these small process vessels are knockout pots to collect liquid in the gas stream, if any, before it reaches the flare.

The Primary Flare (B410) and Secondary Flare (A410) are used to control ethylene oxide emissions from the emission units listed in the table above. Ethylene oxide emissions from emission points 410B and 410A are subject to emission limits under CO-R21-97-41 and CO-R27-99-14-A(92) (Conditions 4.1.4 and 4.1.6); Tanks 9704 and 9705 which store ethylene oxide are subject to the provisions of 40 C.F.R. 63, Subpart PPP for Group 1 storage vessels (Condition 4.1.1); and emissions from the various sampling connectors, unloading seal pots, and double valve and vent systems routed to the Primary Flare (B410) and Secondary Flare (A410) are subject to equipment leak detection and repair requirements of 40 C.F.R. 63, Subpart H (Condition 4.1.3).

The compliance option Union Carbide Corporation has chosen for their 40 C.F.R. 63, Subpart PPP Group 1 storage tanks (Tanks 9704 and 9705) is to reduce the total organic HAP emissions (consisting only of ethylene oxide) by using a closed vent system and flare. Under 40 C.F.R. 63, Subpart PPP, the Primary Flare (B410) is subject to the general control device requirements for flares under 40 C.F.R. §63.11(b) and periods of planned routine maintenance of the Primary Flare (B410) when emissions are routed to the Secondary Flare (A410) are limited to 240 hours per year (see Conditions 4.1.1.1a and 4.1.1.1.b).

For the emissions from the various sampling connectors, unloading seal pots, and double valve and vents systems routed to the Primary Flare (B410) and Secondary Flare (A410), the provisions of 40 C.F.R. §63.172(d) for closed-vent systems and control devices requires these flares to comply with the general control device requirements for flares under 40 C.F.R. §63.11(b).

Since the Primary Flare (B410) and Secondary Flare (A410) are already subject to control device requirements under 40 C.F.R. 63, Subpart PPP, 40 C.F.R. 63, Subpart H, and 40 C.F.R. §63.11(b) and that continuous compliance determination method was already specified in the initial Title V permit, the Primary Flare (B410) and Secondary Flare (A410) are not subject to additional monitoring under the CAM rule per 40 C.F.R. §§64.2(b)(1)(i) and (b)(1)(vi).

The CAM applicability of equipment vented to Scrubber F040 was discussed in the Fact Sheet for R30-03900005-2012 (Group 2 of 5).

The CAM applicability of equipment vented to Flare A163 will be discussed in the Fact Sheet for R30-03900005-2012 (Group 4 of 5).

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. Since the Union Carbide Corporation's Institute Plant has not submitted any applications for a modification under PSD after January 2, 2011, the requirements of the Greenhouse Gas Tailoring Rule do not apply.

Non-Applicability Determinations

The following requirements have been determined not to be applicable to the subject facility due to the following:

None.

Request for Variances or Alternatives

None.

Insignificant Activities

Insignificant emission unit(s) and activities are identified in the Title V application.

Comment Period

Beginning Date: February 8, 2012

Ending Date: March 9, 2012

All written comments should be addressed to the following individual and office:

Carrie McCumbers
Title V Permit Writer
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Procedure for Requesting Public Hearing

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall grant such a request for a hearing if he/she concludes that a public hearing is appropriate. Any public hearing shall be held in the general area in which the facility is located.

Point of Contact

Carrie McCumbers
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone: 304/926-0499 ext. 1226 • Fax: 304/926-0478

Response to Comments (Statement of Basis)

As a result of comments received by e-mail, dated March 9, 2012, from Mike Gordon of US EPA Region III, the following changes were made to the Title V permit:

- 1) In Condition 3.5.3, EPA's contact information was updated from "Office of Enforcement and Permits Review (3AP12)" to "Office of Air Enforcement and Compliance Assistance (3AP20)."
- 2) Condition 4.2.2 was revised as follows:

"For the purpose of determining compliance with the opacity limits set forth in Sections 4.1.8 and 4.1.9 for flares B410 and A410, the permittee shall conduct visual emissions monitoring at a frequency of at least once per month with a maximum of forty-five (45) days between consecutive readings, unless there is a plant shutdown. Following a shutdown that prevents observations within forty (45) days, visual monitoring must be performed within seven (7) days of return to operation. These checks shall be performed during periods of ~~normal~~ operation of emission sources that vent from the referenced emission points for a sufficient time interval to determine if there is a visible emission. If visible emissions are identified during the visible emission check, or at any other time regardless of operations, the permittee shall conduct a visual emission evaluation per 40 C.F.R. 60, Appendix A, Method 9 within three (3) days of the first identification of visible

emissions. A 40 C.F.R. 60, Appendix A, Method 9 evaluation shall not be required if the visible emission condition is corrected within seventy-two (72) hours after the visible emission and the sources are operating at normal conditions. (*B410 and A410*) **[45CSR§30-5.1.c]**”

- 3) The monitoring frequency in Condition 5.4.2 was revised from semi-annual to monthly.

In the March 9, 2012 e-mail, Mike Gordon commented on Condition 5.4.2 and stated that in order to be federally enforceable, the TPY limits in Section 5.1 needed to be determined on at least a monthly basis and not semi-annual. The method used in the draft permit to demonstrate compliance with the emission limits of 5.1.1 and 5.1.2 for barge loading, the throughput limits of 5.1.3 for barge loading, and the emission limits and annual throughput limits from Condition 5.1.4 for barge unloading were the recordkeeping requirements in Conditions 5.4.1 and 5.4.2 (R13-2646A, Conditions 4.4.4 and 4.4.5). Condition 5.4.1 required the permittee to record for each loading activity, the date, amount, and name of the chemical/material that was loaded; and for each unloading activity the date, amount and name of the chemical/material that was unloaded. Then on a semi-annual basis, the permittee was required by Condition 5.4.2 to review the records maintained per Condition 5.4.1 and determine if the throughputs were within the limits stated in Conditions 5.1.3 and 5.1.4.

In a separate e-mail dated March 15, 2012, Mike Gordon suggested that the basis for his request to change the recordkeeping requirements in Condition 5.4.2 comes from 45CSR§30-5.1.c.1.B which states that each permit shall contain the following: “Where the applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant time periods that are representative of the source's compliance with the permit, as reported pursuant to 45CSR§30-5.1.c.3. Such monitoring requirements shall assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Recordkeeping provisions may be sufficient to meet the requirements of this subparagraph (5.1.c.1);”

Since R13-2646A already had monitoring in place (Conditions 5.4.1 and 5.4.2), additional monitoring or in this case recordkeeping, would be added under 45CSR§30-5.1.c.1.B if that periodic monitoring was insufficient to yield reliable data from the relevant time periods that are representative of the source's compliance with the permit. Since R13-2646A, Condition 4.4.5 required the permittee to review the loading/unloading activities on a semi-annual basis to determine compliance with the annual throughput limits (for barge loading) and number of unloading activities (for barge unloading) on a 12 month rolling total, the monitoring in R13-2646A already provided monitoring consistent with the applicable requirement.

The question then is, whether the monitoring is often enough to assure compliance. R13-2646, consisting of barge loading and unloading emission and throughput limits, was issued on July 19, 2006. The monitoring and recordkeeping has been in place for nearly six years without a history of noncompliance with these limits. Also, the VOC and HAP emission limits for barge loading and unloading operations are rather small and under the current version of 45CSR13, the annual limits (1.3 TPY of VOC for barge loading, 1.1 TPY of MIBK for barge loading, 0.01 TPY of ethylene glycol for barge loading, and 2 TPY of VOC and total HAPs for barge unloading) do not exceed the emission levels defined as a modification under 45CSR§13-2.17 (10 tons per year of VOC and 5 tons per year of HAPs) which require a permit. Another point is that Union Carbide Corporation is already a major source of VOC and HAP emissions and the current R13-2646A emission limits on the barge loading and unloading operations are not intended for the source to remain a synthetic minor. Therefore, given the compliance history and the fact that the emission limits are very small and have no purpose as a synthetic minor limit, but rather to inventory the emissions, the frequency of the existing monitoring under R13-2646A should be considered

adequate; however, Union Carbide Corporation consented to changing the frequency of the compliance demonstrations to a monthly basis in order to have this Title V renewal permit issued within the twelve month statutory deadline provided under 45CSR§30-6.1.b.

- 4) Condition 5.4.3 was removed. This condition contained the 40 C.F.R. 63, Subpart Y –“National Emission Standards for Marine Tank Vessel Loading Operations” requirements for Barge Loading (B1L). Since the barge loading operation is an existing source less than 10 and 25 tons, 40 C.F.R. §63.560(a)(3) stated the permittee is only subject to the recordkeeping requirements of 40 C.F.R. §63.567(j)(4) and the emission estimation requirements of 40 C.F.R. §63.565(l). EPA questioned why the facility was not also subject to the submerged fill standards outlined in 40 C.F.R. §63.560(a)(4). Upon further review by Union Carbide Corporation, it was determined that Barge Loading (B1L) meets the exemption from 40 C.F.R. 63, Subpart Y under 40 C.F.R. §63.560(d) because the vapor pressures of the materials loaded are less than 10.3 kilopascals (kPa) (1.5 pounds per square inch, absolute) (psia) at standard conditions, 20 °C and 760 millimeters Hg (mmHg).